

soils in which *Azotobacter chroococcum* is extremely active in fixing nitrogen. By the use of cultures, which are described, 21 species of soil algae were found, all but two being Cyanophyceae, and the best represented family being Nostocaceae. It is concluded that these algae are an important source of energy for *Azotobacter*.—J. M. C.

Podozamites distans.—The fragments referred to this form, sometimes under the name of *Cycadocarpidium*, have been regarded by some as pinnate leaves, and by others as shoots with spirally arranged leaves. The megasporophylls, with two ovules at the base, bearing some resemblance to those of *Dioon*, are collected into a loose cone. Nevertheless, SCHUSTER³⁴ comes to the conclusion that *Podozamites distans* is a primitive conifer, coming from the same Cycadofilicales stock which gave rise to the Ginkgoales. Consequently, he would have *Podozamites* removed from the Cycadales and placed with Coniferales. SCHUSTER'S figures, as well as two of NATHORST'S which he reproduces, seem to the reviewer to favor relationship to the Cycadales.—CHARLES J. CHAMBERLAIN.

Anatomy of Equisetum.—Lady ISABEL BROWNE³⁵ has investigated the anatomy of the strobilus and of the fertile stem of *Equisetum*. The xylem situation in this genus is of great interest, and in the axis of the strobilus it is best developed. At the nodes, the xylem forms a ring or occurs as bands of varying width; while in the internodes the xylem breaks up into definite strands. *E. arvense*, *E. palustre*, and *E. limosum* form a series showing progressive reduction of the xylem. The study of the strobilus further confirms the view that the "sporangiohores" are not lobes of a suppressed foliar member, but are "whole appendages," which would seem to indicate that they are not sporangiohores.—J. M. C.

Stomata of Bennettites.—LIGNIER³⁶ has discovered the existence of stomata on the interseminal scales of *Bennettites Morieri*. The structure as figured is obvious enough, and about the guard cells there are concentric subsidiary cells. LIGNIER raises the question whether the presence of these stomata does not indicate freedom for the movement of air among scales and ovules, and therefore less compactness of structure than develops later, when the seeds mature and the tips of the interseminal scales hypertrophy. Since stomata occur within the ovaries of angiosperms, as *Lilium* for example, their presence does not prove the free circulation of air.—J. M. C.

³⁴ SCHUSTER, JULIUS, Bemerkungen über *Podozamites*. Ber. Deutsch. Bot. Gesells. 29:450-456. pl. 17. 1911.

³⁵ BROWNE, ISABEL M. P., Contributions to our knowledge of the anatomy of the cone and fertile stem of *Equisetum*. Ann. Botany 26:663-703. pls. 64, 65. figs. 10. 1912.

³⁶ LIGNIER, O., Stomates des écailles interséminales chez le *Bennettites Morieri* (Sap. et. Mar.). Bull. Soc. Bot. France 59:425-428. figs. 2. 1912.